UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 7,647,255 B2
APPLICATION NO. : 10/763803
DATED : January 12, 2010
INVENTOR(S) : Jihua Wang

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The Title Page, showing an illustrative Figure, should be deleted and substitute therefor the attached title page.

IN THE DRAWINGS:

Please replace the informal drawings with the attached formal drawings.

Signed and Sealed this

Eighth Day of June, 2010

David J. Kappos

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Director of the United States Patent and Trademark Office

(12) **United States Patent**
Wang et al.

(10) **Patent No.: US 7,647,255 B2**
(45) **Date of Patent: Jan. 12, 2010**

(54) **ROTABLE INVENTORY CALCULATION METHOD**

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(73) Assignee: **United Technologies Corporation**, Hartford, CT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1272 days.

(21) Appl. No.: **10/763,803**

(22) Filed: **Jan. 23, 2004**

(65) **Prior Publication Data**

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(51) **Int. Cl.**
G06Q 10/00 (2006.01)

(52) **U.S. Cl.** **705/28**; 705/8

(58) **Field of Classification Search** 705/28
See application file for complete search history.

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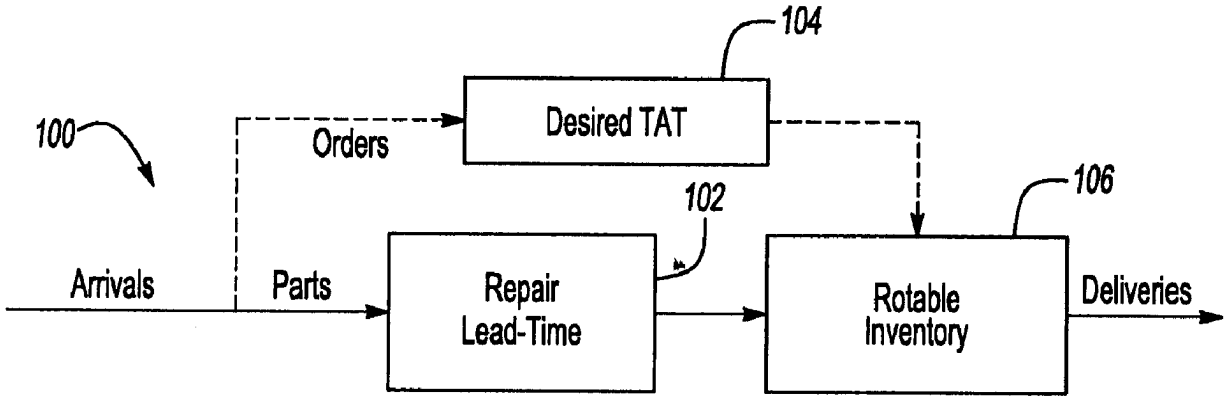
(57) **ABSTRACT**

A method for conducting a repairable inventory analysis calculates the minimum number of repairable parts to be held in inventory while still being able to satisfy the demand for spare parts even in view of uncertain repair lead times. The method uses a set of equations that relates a customer service level to arbitrary probability distribution functions of a repair lead-time and a part arrival process. The distributions are then searched to locate the optimal inventory level in the distribution.

16 Claims, 3 Drawing Sheets



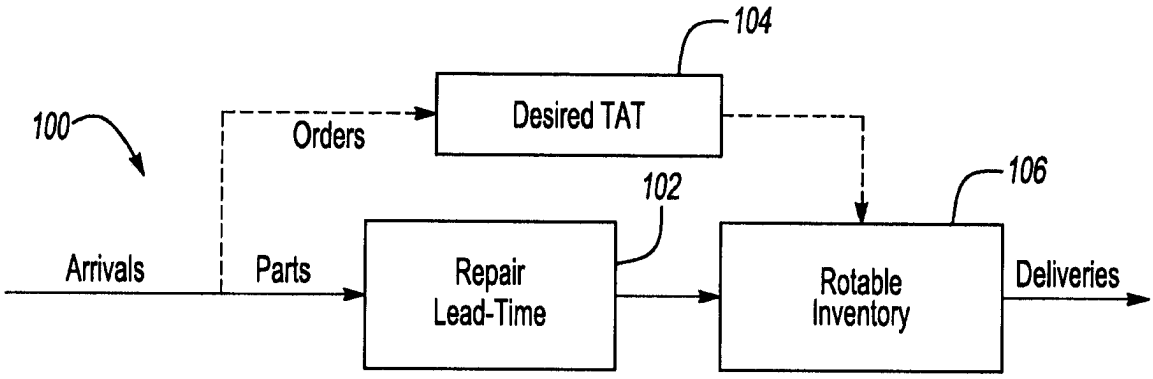

104
100
Orders
Desired TAT
102
106
Arrivals
Parts
Repair
Lead-Time
Rotable
Inventory
Deliveries

Fig-1

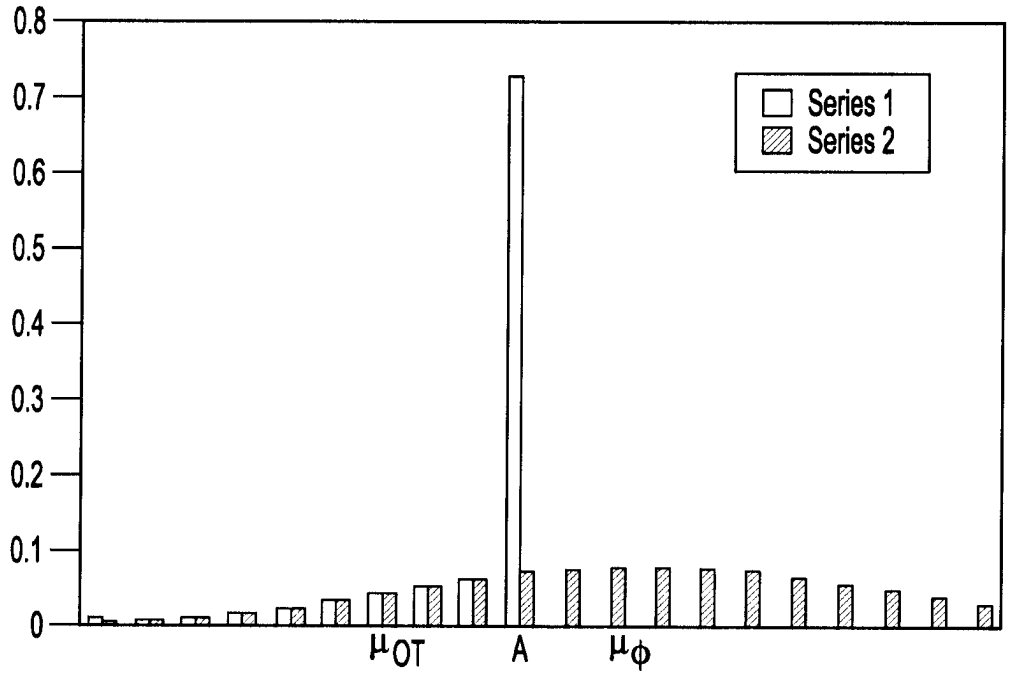

0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Series 1
Series 2
μOT
A
μφ

Fig-2

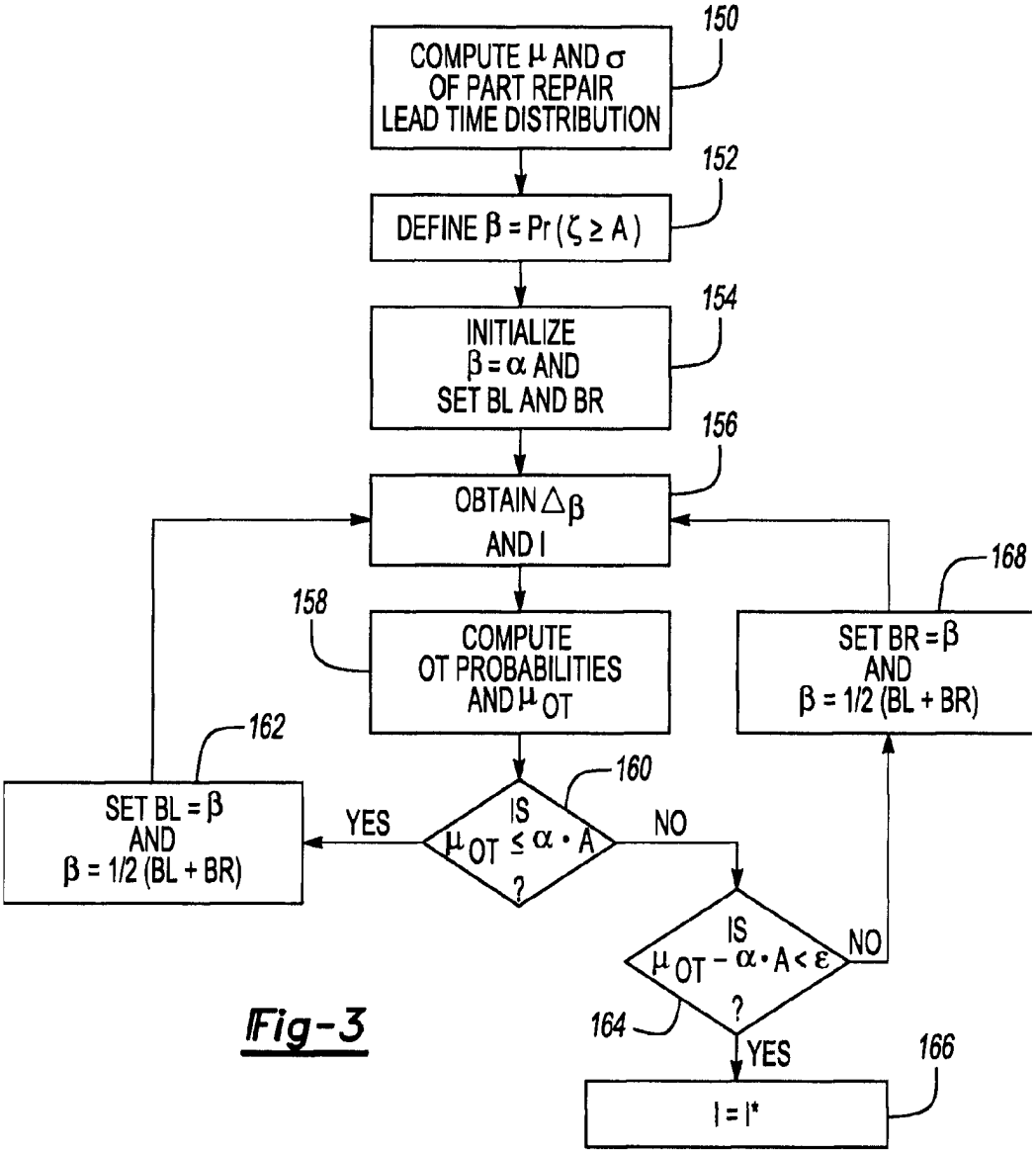

150
COMPUTE μ AND σ OF PART REPAIR LEAD TIME DISTRIBUTION
152
DEFINE β = Pr(ζ ≥ A)
154
INITIALIZE β = α AND SET BL AND BR
156
OBTAIN Δβ AND I
158
COMPUTE OT PROBABILITIES AND μ OT
160
IS μ OT ≤ α • A ?
YES
NO
162
SET BL = β AND β = 1/2 (BL + BR)
168
SET BR = β AND β = 1/2 (BL + BR)
IS μ OT − α • A < ε ?
NO
164
YES
166
I = I*

Fig-3

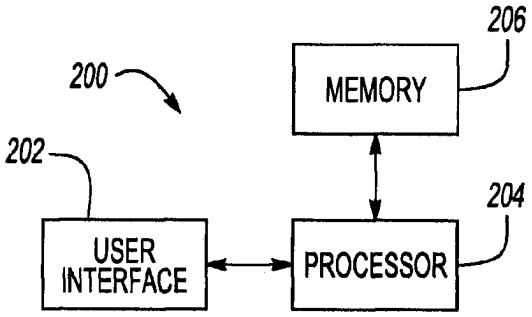

200
206
MEMORY
202
204
USER INTERFACE
PROCESSOR

Fig-4